Remarks:

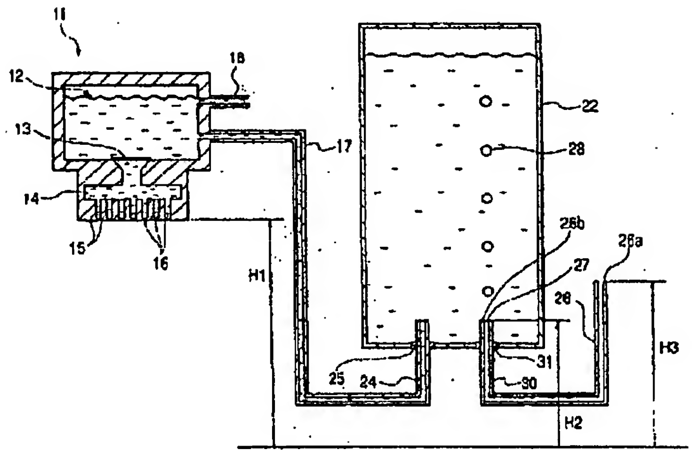
This Amendment and the accompanying Request for Continued Examination are being filed responsive to the February 12, 2007 final Office action that was issued in connection with the above-identified patent application. Claims 1, 3, 7-12 and 15-41 are pending in the application. In view of the amendments above and the remarks below, applicants respectfully request reconsideration of the application and allowance of the pending claims.

Rejections under 35 U.S.C. § 103

Claims 1, 3, 7-12 and 15-41 are rejected under 35 U.S.C. § 103(a) based on Koizumi et al. (U.S. Patent Application Publication No. US 2003/0025773) variously in view of Scheffelin et al. (U.S. Patent No. 5,675,367), Barinaga (U.S. Patent No. 5,675,367) and/or Childers (U.S. Patent No. 6,116,723).

Koizumi et al. discloses an ink jet recording apparatus. The apparatus includes a recording head 11 and an ink tank 22. The recording head includes a sub-tank 12 that stores ink and nozzles 15. Sub-tank 22 is connected to ink tank 22 via an ink supply tube 17 and is mostly filled with ink, but includes an air layer above the ink. Ink tank 22 includes an atmosphere releasing tube 26. Within that tube, a meniscus 27 of ink is formed at the interface between ink and air. The meniscus generates surface tension that exerts a constant negative pressure on nozzles 15 to prevent ink leakage from the nozzles.

FIG. 1



During operation, the meniscus moves to compensate for changes in pressure in the ink tank to maintain the constant negative pressure on nozzles 15 (Koizumi et al.; Fig. 1; p. 4; pars. 0036-0043). When the inner temperature of recording head 11 increases due to heat generation, the air in sub-tank 12 causes pressure in the sub-tank to increase and causes flow of ink from the sub-tank to ink tank 22 to relieve the pressure. As a result of that flow, the pressure in the ink tank increases causing meniscus 27 to move away from the ink tank to relieve the pressure. In contrast, when ink in recording head 11 is consumed, the volume of ink in sub-tank 12 is reduced to decrease the pressure in the sub-tank. That decrease causes ink in ink tank 22 to flow into sub-tank 12 via ink supply tube 17. The volume of ink in ink tank 22 is reduced causing a decrease in pressure inside the ink tank. That decrease in pressure causes the meniscus to withdraw into the ink tank, and allows air bubbles 28 to enter into the ink tank to restore the pressure (Koizumi et al.; p. 4; pars. 0044-0047).

Koizumi et al. does not, however, disclose or suggest all of the subject matter recited in amended independent claims 1, 12, 33, 35 and 38. For example, Koizumi et al. does not disclose or suggest a printing-fluid container that includes an air interface configured to move air <u>out of</u> the printing-fluid reservoir <u>as the printing fluid is moved into</u> the reservoir, as recited in amended independent claims 1, 12, 33 and 35. Instead, the ink jet recording apparatus of Koizumi et al. includes an ink tank with an atmosphere releasing tube to contain a meniscus of ink, and to allow air bubbles to enter the ink tank.

There is no disclosure or suggestion that the atmosphere releasing tube is configured to move air out of the ink tank, much less that the atmosphere releasing tube is configured to move air out of the ink tank as the ink is moved into the ink tank. Moreover, Koizumi teaches away from modifying the atmosphere releasing tube to move air out of the ink tank because such a modification would not allow a meniscus of ink to form, which would prevent negative pressure from being exerted on the nozzles and would cause an ink leakage from those nozzles (thereby defeating the explicit purpose of the atmosphere releasing tube of containing the meniscus of ink so that the meniscus can exert negative pressure on the nozzles).

Additionally, Koizumi et al. does not disclose or suggest a method of supplying printing fluid that includes allowing air to exit the reservoir through the air-interface as the printing fluid is returned to the reservoir through the printing-fluid interface during a second mode of operation, as recited in amended independent claim 38. Instead, the

ink jet recording apparatus of Koizumi et al. includes an ink tank with an atmosphere releasing tube that allows air bubbles to only enter the ink tank.

There is no disclosure or suggestion of allowing air to exit the ink tank through the atmosphere releasing tube, much less allowing air to exit the ink tank as the ink is returned to the ink tank via the ink supply tube during a second mode of operation. Thus, Koizumi et al. fails to disclose or suggest applicants' printing-fluid container and method of supplying printing fluid as recited in independent claims 1, 12, 33, 35 and 38.

Scheffelin et al. discloses an ink refill system 150 designed for recharging a print cartridge. The ink refill system includes an ink reservoir top having a reveal valve 156 and an ink fill hole 173. A valve of the print cartridge is connected to reveal valve 156 to fill the print cartridge with ink. The ink fill hole is used for filling ink refill system 150 with ink (Scheffelin et al.; Fig. 25; col. 9, lns. 36-44; col. 10, lns. 19-24). The ink refill system is filled with ink by first inserting a hollow pipe 176 into ink fill hole 173 and pumping out any air in ink reservoir 175 using pump 178. Next, carbon dioxide from supply 180 is pumped through pipe 176 to fill the ink reservoir with carbon dioxide. That carbon dioxide is then pumped out by pump 178. Although a small amount of carbon dioxide will remain in the ink reservoir, that carbon dioxide is "preferable over air" because carbon dioxide is more soluble in ink than air. Ink reservoir 175 is then filled with ink from ink supply 182 (Scheffelin et al.; Fig. 27; col. 10, lns. 30-59).

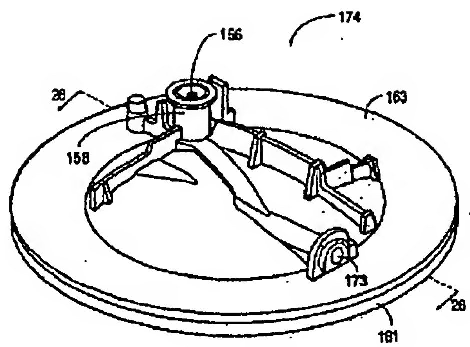


FIG. 25

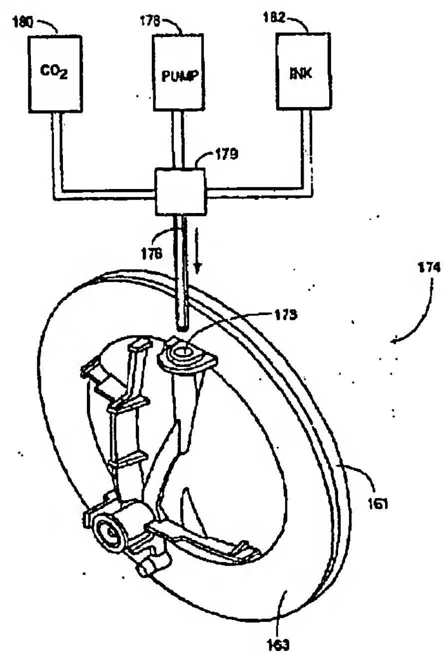


FIG. 27

Scheffelin et al. does not, however, disclose or suggest all of the subject matter recited in amended independent claims 1, 12, 33, 35 and 38. For example, Scheffelin et al. does not disclose or suggest a printing-fluid container that includes an air interface configured to move air out of the printing-fluid reservoir <u>as the printing-fluid is moved</u>

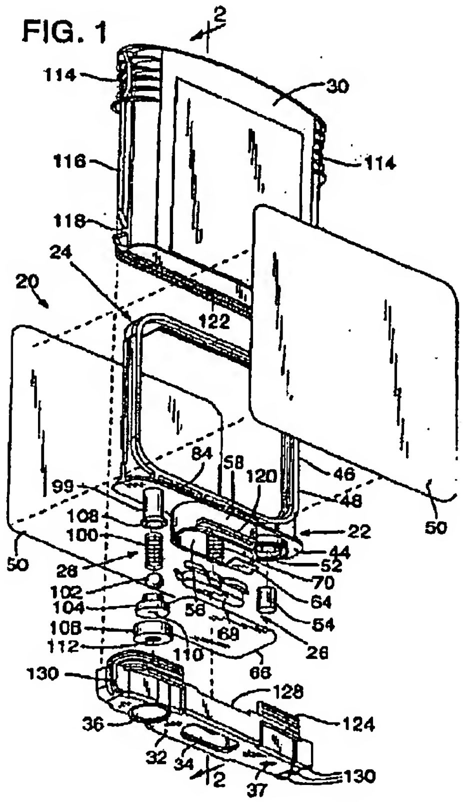
into the reservoir, as recited in amended independent claims 1, 12, 33 and 35. The ink refill system of Scheffelin et al. includes an ink fill hole in which a hollow pipe is inserted to pump air out of the ink reservoir before the ink reservoir is purged with carbon dioxide and then filled with ink from the ink supply. There is no disclosure or suggestion of moving air out of the ink reservoir as the reservoir is being filled with ink. In fact, the ink reservoir will not have any air to move out as the ink reservoir is being filled with ink. Moreover, Scheffelin et al. teaches away from removing air from the ink reservoir as the ink reservoir is being filled with ink because Scheffelin et al. explicitly teaches the specific sequence of removing any air from the ink reservoir, purging that reservoir with carbon dioxide, and then filling the ink reservoir with ink to ensure that the ink reservoir does not have any air and has only a small amount of carbon dioxide when the ink reservoir is filled with ink.

Additionally, Scheffelin et al. does not disclose or suggest a method of supplying printing fluid that includes allowing air to exit a reservoir through an air-interface as the printing fluid is returned to the reservoir through a printing-fluid interface during a second mode of operation, as recited in amended independent claim 38. Instead, the ink refill system of Scheffelin et al. includes an ink fill hole in which a hollow pipe is inserted to pump air out of the ink reservoir before the ink reservoir is purged with carbon dioxide and then filled with ink from the ink supply. There is no disclosure or suggestion of allowing air to exit the ink reservoir through the ink fill hole as ink is being returned to the ink reservoir during a second mode of operation.

Moreover, there is no disclosure or suggestion to combine the teachings of Koizumi et al. and Scheffelin et al. Furthermore, even in the improper combination of Koizumi et al. and Scheffelin et al. is made, that improper combination does not disclose or suggest all of the subject matter recited in amended independent claims 1, 12, 33, 35 and 38. At best, the improper combination of Koizumi et al. and Scheffelin et al. would provide an ink tank with an atmosphere releasing tube that allows air bubbles to enter an ink refill system that first removes any air from the ink tank, purges the ink tank with carbon dioxide, and then fills the ink tank with ink. Thus, Scheffelin et al., either alone or in combination with Koizumi et al., fails to disclose or suggest applicants' printing fluid container and method of supplying printing fluid as recited in independent claims 1, 12, 33, 35 and 38.

Barinaga discloses an ink supply 20 including an ink reservoir 24, a fluid outlet 28 having a septum 104 and a fill port 52. The ink reservoir is filled with ink by injecting ink through fill port 52. A needle is inserted through septum 104 of fluid outlet 28 to allow escape of air from within the reservoir. Once the ink reservoir is filled, a septum 54 is pressed into the fill port to prevent the "escape of ink or the entry of air" (Barinaga; Fig. 1; col. 6, lns. 18-35).

FIG. 1



Barinaga does not, however, disclose or suggest all of the subject matter recited in independent claims 1, 12, 33, 35 and 38. For example, Barinaga does not disclose or suggest an air interface configured to move air <u>into</u> the printing fluid reservoir, as recited in amended independent claims 1, 12, 33 and 35. Instead, a needle is inserted through a septum of the fluid outlet to allow escape of air from within the reservoir. There is no disclosure or suggestion of allowing air to move into the reservoir. In fact, Barinaga teaches away from allowing air to move into the reservoir because Barinaga explicitly teaches to press a septum into a fill port to prevent the entry of air after the reservoir is filled with ink.

Additionally, Barinaga does not disclose or suggest allowing air to enter the reservoir through the air-interface during a first mode of operation, as recited in amended independent claim 38. Instead, air is allowed to escape from within the reservoir by inserting a needle through a septum of the fluid outlet. There is no disclosure or suggestion of allowing air to enter the reservoir during a first mode of operation. Thus, Barinaga, either alone or in combination with Koizumi et al. and/or Scheffelin et al., fails to disclose or suggest applicants' printing fluid container and method of supplying printing fluid as recited in independent claims 1, 12, 33, 35 and 38.

Childers discloses an ink container including a collapsible ink reservoir that is pressurized by a pressure source to provide pressurized ink to an ink jet printhead (Childers; col. 2, lns. 33-52). Childers does not, however, disclose or suggest all of the subject matter recited in amended independent claims 1, 12, 33, 35 and 38. For example, Childers does not disclose or suggest a printing-fluid container including a printing-fluid reservoir configured to hold a free volume of printing fluid and air mixed together therein, as recited in amended independent claims 1, 12, 33 and 35. Additionally, Childers does not disclose or suggest a method of supplying printing fluid including storing a free volume of printing fluid and air mixed together in a reservoir, as recited in amended independent claim 38. Instead, the Childers' ink container includes a collapsible ink reservoir that is pressurized by a pressure source. There is no disclosure or suggestion in Childers of storing a free volume of ink in the ink reservoir. Thus, Childers, both alone and in combination with Koizumi et al., Scheffelin et al.

and/or Barinaga, fails to disclose or suggest applicants' printing fluid container and method of supplying printing fluid as recited in independent claims 1, 12, 33, 35 and 38.

For at least the above reasons, the rejections of independent claims 1, 12, 33, 35 and 38 under 35 U.S.C. § 103(a) should be withdrawn. Claims 3, 7-11, 15-32, 34, 36-37 and 39-41 depend from independent claims 1, 12, 33, 35 and 38, and thus are allowable for at least the same reasons as those independent claims.

Conclusion

Applicants believe that this application is now in condition for allowance, in view of the above amendments and remarks. Accordingly, applicants respectfully request that the Examiner issue a Notice of Allowability covering the pending claims. If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record.

Respectfully submitted,

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to Examiner L. Martin, Group Art Unit 2853, Assistant Commissioner for Patents, at facsimile number (571) 273-8300 on May 10, 2007.

Christie A. Doolittle